



**Aquatic Invasive Species:  
the Scope, the Legal and  
Management Response for NPS**

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**NPS Aquatic Professionals Conference  
February 14, 2008**

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## Overview



- Introduction
- Scope of the problem
- Law and policy
- NPS Response
- Funding opportunities
- The future

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## Aquatic Invasive (Nuisance) Species Defined

- **“aquatic nuisance species”** means a nonindigenous species that threatens the diversity or abundance of native species or the ecological stability of infested waters, or commercial, agricultural, aquacultural or recreational activities dependent on such waters;
- **“nonindigenous species”** means any species or other viable biological material that enters an ecosystem beyond its historic range, including any such organism transferred from one country into another;



Photograph by Edwin G. Schaeffer  
Pennsylvania State University at Erie



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## Environmental and Economic Impacts

### AIS as Biological Pollution

Oil spills can be cleaned up, but biological spills are forever!

Annually, 21 Billion gallons of ballast water--2.4 million gallons per hour/40,000 gallons per minute--containing thousands of nonindigenous species are discharged into U.S. waters

#### Types of Aquatic-Nuisance-Species Impacts

Environmental Effects	Economic Impacts	Public Health
Predation	Industrial Water Users	Cholera Risk
Parasitism	Municipal Water Supplies	
Competition	Nuclear Power Plants	
Introduction of new pathogens	Commercial Fisheries	
Genetic	Recreational Fishing	
Habitat Alterations	Other Water Sports	

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## Economic Impact

- Billions annually. 79 animal and plant species, 1906 to 1991: \$79 billion.
- 15 recent introductions could cost the U.S. \$134 billion by 2050.
- Sea lamprey control costs (U.S. and Canada): >\$12 million/year
- Purple loosestrife management cost and lost forage value: \$45 million/year
- Present worth of decreased economic value of sport and commercial fisheries in the U.S. Great Lakes attributable to a fully developed ruffe population: \$119 million.



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## Resource Impacts

Reductions in native fish populations (such as lake trout, walleye, yellow perch and catfish) threaten a sport and commercial fishing industry that is valued at almost \$4.5 billion annually and supports 81,000 jobs.

Invasive species impact nearly half of the species currently listed as Threatened or Endangered under the U.S Federal Endangered Species Act.

The Nature Conservancy states “Primary cause of ecosystem changes and the greatest single threat to native species is predation or competition by non-native weeds and animal pests”



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### Number of nonindigenous species in selected ecosystems:



- San Francisco Bay/Inland Delta, CA--234 species (plus up to 123 others).
- Great Lakes--139 species
- Hudson River, NY--154 species
- Coos Bay, OR--67+ species
- Florida inland waters--154+ species
- Chesapeake Bay--120+ species
- Hawaii--4,465 species
- U.S. (OTA 1993) -- 4,500+
- Proportion causing serious harm -- 15%

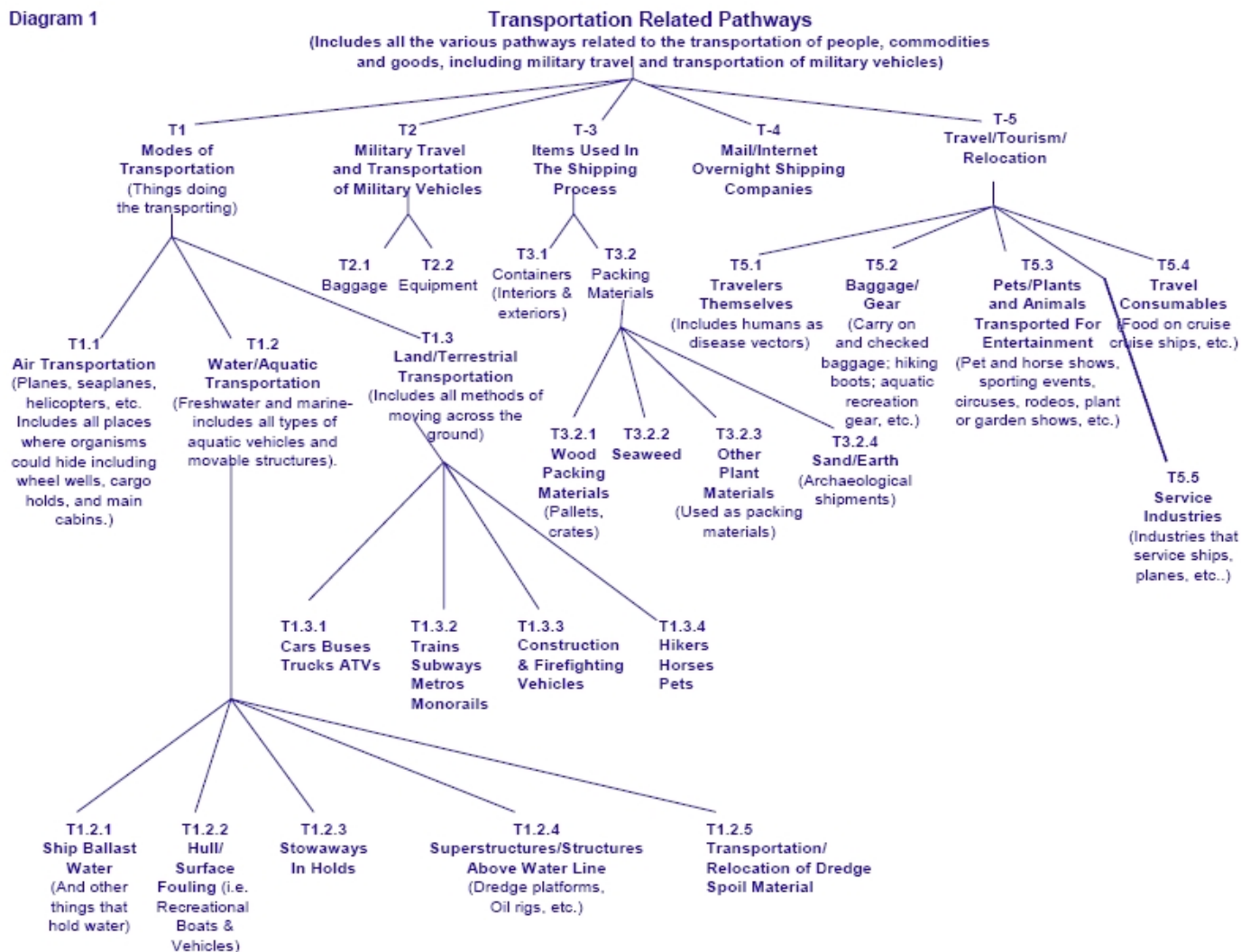
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Diagram 1





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## Federal Authorities

- **Lacey Act (intersection with State Law)**
- **Executive Order 13-112**
- **Plant Protection Act**
- **Invasive Species Act of 1996 creates Aquatic Nuisance Species Task Force and Regional Panels.**



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## NPS Response: Park Authorities

### Management Policies:

4.4.4 Management of  
Exotic Species, 4.4.4.1  
Introduction or  
Maintenance of Exotic  
Species

Code of Federal  
Regulations –Fishing-36  
CFR 2.3, Pets - 36 CFR §  
2.15.

Superintendent  
Compendium

Administrative Authorities -  
Concessionaires



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## Incident Command System (ICS) Response to AIS

- ICS adopted by the Aquatic Nuisance Species Task Force as response mechanism for AIS.
- NPS is the first federal agency to use ICS for AIS.
- NPS Quagga Mussel Response and Prevention Plan for the Western United States
- NPS Viral Hemorrhagic Septicemia Prevention and Response Plan (draft) release date anticipated in May 2008.



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# NPS Response: NPS Boater Education Programs



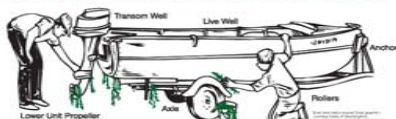
## STOP AQUATIC HITCHHIKERS!

Prevent the transport of nuisance species.  
Clean all recreational equipment.

[www.ProtectYourWaters.net](http://www.ProtectYourWaters.net)



### Clean Your Boat and Gear



#### Follow these steps

every time you come in contact with any body of water

- 1 Remove ALL visible mud, plants, fish, or other tiny animals from your boats, trailers, and other equipment, including waders, boots, clothing, and nets.
- 2 DO NOT dump any water from another source into Yellowstone waters. Drain your boat hull and live well in a safe location (a flat paved, dirt, or gravel area) AWAY from all park surface waters.
- 3 NEVER empty bait or release fish, other animals, or plants into a body of water unless they came out of it.
- 4 CLEAN AND DRY EVERYTHING that comes in contact with water before entering a new body of water.
  - Dry everything in the sun for a period of 5 days, or
  - Use high pressure, hot (104°F) water (available at car washes outside the park) to clean your boat, trailer, waders, and equipment, or
  - For equipment that cannot be exposed to hot water, dip into 100% vinegar for 20 minutes, or a 1% table salt solution for 24 hours, using the following ratios:

Water (gallons)	5	10	25	50	100
Salt (cups)	1	2	5	10	20



Hydrilla on boat  
*Hydrilla verticillata*  
Photo by Jeff Schardt  
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## NPS Response

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## Funding

- NPS park base
- NR Challenge Exotic Plant Teams
- NRPP- RM
- NRPP-RP
- BRMD competitive Grants
- Pulling Together – National Fish and Wildlife Foundation
- Legacy – DOD
- Fee Demonstration
- National Invasive Species Act – FWS Grants
- Other federal and state agencies and counties



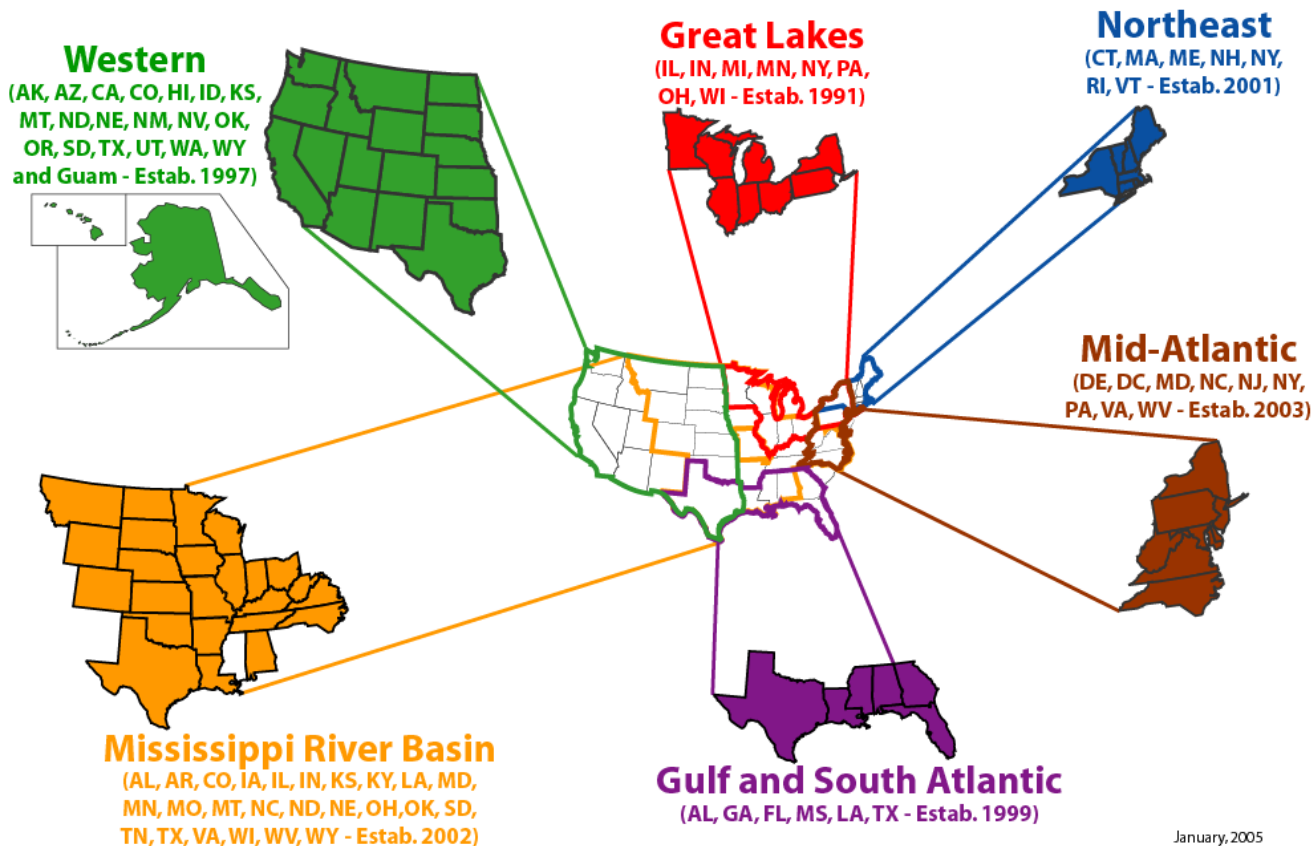
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### The Regional Panels of the Aquatic Nuisance Species Task Force



January, 2005  
Graphics by Don MacLean, USFWS

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# Aquatic Invasive Species



[Zebra Mussel](#)



[Ruffe](#)



[Chinese Mitten Crab](#)



[European Green Crab](#)



[Brown Tree Snake](#)



[Caulerpa](#)



[Purple Loosestrife](#)



[Eurasian Water Milfoil](#)



[New Zealand Mudsnail](#)



[Asian Swamp Eel](#)



[Lionfish](#)



[Round Goby](#)



[Sea Lamprey](#)



[Snakehead](#)



[Nutria](#)



[Hydrilla](#)



[Applesnail](#)



[Water Hyacinth](#)



[Rusty Crayfish](#)



[Giant Salvinia](#)

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## Contacts for Further Information

- [www.invasivespecies.gov](http://www.invasivespecies.gov)
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